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10/537,780	06/06/2005	Kanetaka Sekiguchi	Q88209	4854

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EXAMINER	
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ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/537,780	SEKIGUCHI, KANETAKA	
	Examiner	Art Unit	
	CALVIN C. MA	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been received filed on June 6, 2005.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-6, 13-20, 22, 24, 25-28, 30-33, 35-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Kimura (US Pub: 2002/0196387).

As to claim1, Kimura discloses a liquid crystal display device where a first substrate (11) having a display electrode and a second substrate (34) (see Fig. 1, [0049]) having an opposite electrode are disposed so as to be opposed to each other via a predetermined clearance (i.e. the cell gap of the LCD panel exist for the LC molecule 31 to be filled in) (see Fig. 1, [0049]), and a liquid crystal display element having a liquid crystal layer (31) is provided in the clearance, wherein an

electroluminescent element (22) is provided between the first substrate (11) and the second substrate (34), the liquid crystal display element includes a first reflection film (i.e. the polarization film 35 has the intrinsic property of being able to reflect some spectrum of light) that reflects light from an external light source, and the electroluminescent element includes a second reflection film (21) different form the first reflection film (i.e. the polarizer film material 35 is different from the reflective electrode 21 which is said to be of a metallic composition) (see Fig. 1, [0049]).

As to claim 2, Kimura teaches the liquid crystal display device (80) according to claim 1, wherein an EL control switching element for controlling the electroluminescent element is formed on a liquid crystal layer side of the first substrate, and the electroluminescent element is formed on a liquid crystal side of the EL control switching element via an insulating film (i.e. the insulating film 18 is used to insulate the EL element from the rest of the substrate) (see Fig. 1 and 3, [0062]).

As to claim 3, Kimura teaches the liquid crystal display device according to claim 1, wherein the electroluminescent element (22) is formed on a liquid crystal layer side of the first substrate (11), and an EL control switching element for controlling the electroluminescent element is formed on a liquid crystal layer side of the electroluminescent element via an insulating film(i.e. the insulating film 18 is used to insulate the EL element from the rest of the substrate) (see Fig. 1 and 3, [0062]).

As to claim 4, Kimura teaches the liquid crystal display device according to claim 3, wherein the electroluminescent element allows light to transmit the first substrate to go out to a side of the first substrate (i.e. the reflective film 21 allows light to transmit the first substrate to go out to a side of the substrate) (see Fig. 1, [0049]).

As to claim 5, Kimura teaches the liquid crystal display device according to claim 2, wherein an EL connecting opening is formed in the insulating film, and the electroluminescent element and the EL control switching element are electrically connected to each other via the EL connecting opening (i.e. the open 17 is embedded in the insulating film 18 allowing electrical connections) (see Fig. 1, [0049]).

As to claim 13, Kimura teaches the liquid crystal display device according to claim 1, further comprising a liquid crystal layer switching element for supplying a signal for display to the liquid crystal layer between the first substrate and the second substrate to be connected to the display electrode (see Fig. 1, [0049]).

As to claim 14, Kimura teaches the liquid crystal display device according to claim 13, wherein a display electrode is formed on a liquid crystal layer side of the liquid crystal layer switching element, and the display electrode and the switching element for liquid crystal display layer control are electrically connected to each other via an LC connecting opening formed in the insulating film (see Fig. 3, [0062-0063]).

As to claim 15, Kimura teaches the liquid crystal display device according to claim 13, wherein the display electrode is formed on a region that approximately covers a set of two switching elements comprising the liquid crystal layer switching element and the EL control switching element (i.e. as seen in figure 2 and 3 the dual transistor design is covered by one of the electrode) (see Fig. 2, 3, [0049], [0053]).

As to claim 16, Kimura teaches the liquid crystal display device according to claim 1, wherein the switching element comprises a thin film transistor having a source electrode, a drain electrode, and a gate electrode (see Fig. 3, [0062-0063]).

As to claim 17, Kimura teaches the liquid crystal display device according to claim 16, wherein the gate electrodes of the EL control switching element and the switching element for liquid crystal display element included in the same display pixel region are connected to each other and the source electrodes thereof are independent from each other (see Fig. 2, [0053-0055]).

As to claim 18, Kimura teaches the liquid crystal display device according to claim 16, wherein gate electrodes of the EL control switching elements included in two display pixel regions adjacent to each other, respectively, are connected to each other, gate electrodes of the liquid crystal layer switching elements included in two display pixel regions adjacent to each other, respectively, are connected to each other, and a source electrode of the EL control switching element is

connected to a source electrode of the liquid crystal layer switching element included in an adjacent display pixel region (i.e. since the display structure is in a large array each of the pixel switching element are connected to each other being formed on the same plane) (see Fig. 2, [0053-0055]).

As to claim 19, Kimura teaches the liquid crystal display device according to claim 16, wherein gate electrodes of the EL control switching elements included in two display pixel regions adjacent to each other, respectively, are connected to each other, gate electrodes of the liquid crystal layer switching elements included in two display pixel regions adjacent to each other, respectively, are independent from the gate electrodes of the EL control switching elements and are connected to each other, and source electrodes of the EL control switching element and the liquid crystal layer switching element is independent from each other(i.e. as seen in figure 2 and 3 the dual transistor design is covered by one of the electrode) (see Fig. 2, 3, [0049], [0053]).

As to claim 20, Kimura teaches the liquid crystal display device according to claim 16, wherein the switching element is a thin film transistor having a semiconductor layer made of a poly-silicon thin film (see Fig. 3, [0062]).

As to claim 22, Kimura teaches the liquid crystal display device according to claim 1, comprising a color filter disposed between the first substrate and the second substrate (see Fig. 1).

As to claim 24, Kimura teaches the liquid crystal display device according to claim 1, comprising an organic insulating film mixed with a member that absorbs moisture and disposed between the first substrate and the display electrode (i.e. the interlayer film 18 is able to insulate the circuit which would be able to stop moisture as well) (see Fig. 4, [0064])..

As to claim 25, Kimura teaches the liquid crystal display device according to claim 1, comprising at least a polarizing film on a side of the second substrate side opposite to the side on which the liquid crystal layer is provided (i.e. polarizing film 35) (see Fig. 1, [0049]).

As to claim 26, Kimura teaches the liquid crystal display device according to claim 1, comprising at least one optical compensator and a polarizing film disposed on a side of the second substrate opposed from the liquid crystal layer in this order from the second substrate side (i.e. the alignment layer existent on the pixel electrode 23 when implemented as off-axis deposition would have the effect of diffusing the light to a degree) (see Fig. 1, [0052])..

As to claim 27, Kimura teaches the liquid crystal display device according to claim 25, comprising a light diffusing layer positioned between the electroluminescent element and the polarizing film (i.e. the alignment layer existent on the pixel electrode 23 when implemented as off-axis deposition would have the effect of diffusing the light to a degree) (see Fig. 1, [0052]).

As to claim 28, Kimura teaches the liquid crystal display device according to claim 1, comprising a light diffusing layer positioned between the electroluminescent element and the second substrate (i.e. the alignment layer existent on the pixel electrode 23 when implemented as off-axis deposition would have the effect of diffusing the light to a degree) (see Fig. 1, [0052]).

As to claim 30, Kimura teaches the liquid crystal display device according to claim 26, wherein arrangement of an orientation direction of the liquid crystal layer, and the polarizing film and the optical compensator provided on a side of the second substrate opposed from the liquid crystal layer meets arrangement where a transmissivity of the liquid crystal layer becomes approximately maximum during application of a voltage to the liquid crystal layer (i.e. when the liquid crystal layer of Kimura being a Twist Nematic type when mated with the different oriented polarizer would be able to yield high transmissivity as the LC molecule is energized and able to create the optical twisting effect to ensure a transparent state) (see Fig. 1,4, [0059]).

As to claim 31, Kimura teaches the liquid crystal display device according to claim 1, wherein a display face of the liquid crystal display element is positioned on the side of the second substrate, and a light emitting face of the electroluminescent element is positioned on the side of the first substrate (i.e. the frontal layout of the second substrate is the one that is the closest to the user and allow the light to reflect back which is than observed by the user) (see Fig. 1, [0049]).

As to claim 32, Kimura teaches the liquid crystal display device according to claim 1, wherein the first reflection film is a reflection film or a reflecting electrode for performing reflective display according to the liquid crystal display element (see Fig. 1, [0049]).

As to claim 33, Kimura teaches the liquid crystal display device according to claim 1, wherein the second reflection film is a reflecting electrode constituting the electroluminescent element (see Fig. 1, [0049]).

As to claim 35, Kimura teaches the liquid crystal display device according to claim 1, wherein an EL control switching element for controlling the electroluminescent element is formed between the first substrate and the second substrate (see Fig. 1, [0049]).

As to claim 36, Kimura teaches the liquid crystal display device according to claim 1, further comprising a liquid crystal layer switching element for supplying a signal for display to the liquid crystal layer between the first substrate and the second substrate, being connected to the display electrode (see Fig. 1, 2, [0051-0054]).

As to claim 37, Kimura teaches the liquid crystal display device according to claim 35, wherein the electroluminescent element is formed on a liquid crystal layer side of the first substrate, the EL control switching element or the liquid crystal switching element is formed on a liquid crystal layer side of the electroluminescent element via an insulating film, and the liquid crystal display element is formed on a liquid crystal layer side of the EL control switching element or the liquid crystal switching element via an insulating film(i.e. the interlayer film 18 is able to insulate the circuit which would be able to stop moisture as well) (see Fig. 4, [0064]).

As to claim 38, Kimura teaches the liquid crystal display device according to claim 8, wherein the display electrode is a reflective electrode, and the reflection film included in the liquid crystal display element has an opening in a region overlapped with the electroluminescent element (i.e. the display system allow the light of the EL 22 to pass through) (see Fig. 1, [0057]).

As to claim 39, Kimura teaches the liquid crystal display device according to claim 1, wherein a substrate that emits reflective light for reflective display according to the liquid crystal display element is different from a substrate that emits emission light according to the electroluminescent element, from among the first substrate and the second substrate (i.e. the substrate that reflects light is the pixel 23 which is different from the EL element 22) (see Fig. 1).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6-12 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura in view of Dai (US Pub 2003/0063231).

As claim 6, Kimura teaches the liquid crystal display device according to claim 1, but does not explicitly teach wherein the electroluminescent element comprises plural kinds of electroluminescent elements that emit different color lights, respectively.

Dai teaches the electroluminescent element comprises plural kinds of electroluminescent elements that emit different color lights, respectively (i.e. the RGB color EL elements 84 provide multiple colors) (see Fig. 2, [0021]).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have adopted the multiple color OLED emission design of Dai in the EL display system of Kimura in order to easily control the light intensity for every pixel on the panel (see Dai [0014]).

As claim 7, Kimura teaches he liquid crystal display device according to claim 6, wherein a protective film that prevents moisture from permeating the electroluminescent element is provided on the electroluminescent element (i.e. the interlayer film 18 is able to insulate the circuit which would be able to stop moisture as well) (see Fig. 4, [0064]).

As claim 8, Kimura teaches the liquid crystal display device according to claim 7, wherein an insulating planarizing film (i.e. the alignment layer on the electrode 23) for planarizing a step is formed on the electroluminescent element or the EL control switching element, and a display electrode for the liquid crystal display element is formed on the planarizing film (i.e. the alignment layer existent on the pixel electrode act as a planarizing film as it induce a planar texture in the LC molecule by creating an alignment which also insulate the LC molecule from the EL element) (see Fig. 1, [0052]).

As claim 9, Kimura teaches the liquid crystal display device according to claim 8, wherein the planarizing film is provided with a diffusing member that diffuses light (i.e.

the alignment layer existent on the pixel electrode 23 when implemented as off-axis deposition would have the effect of diffusing the light to a degree) (see Fig. 1, [0052]).

As claim 10, Kimura teaches he liquid crystal display device according to claim 8, wherein the display electrode is a reflective electrode and has an opening in its region overlapping with the electroluminescent element (i.e. the display system allow the light of the EL 22 to pass through) (see Fig. 1, [0057]).

As claim 11, Kimura teaches the liquid crystal display device according to claim 10, wherein a surface of the reflective electrode is formed in an undulated shape (i.e. the alignment layer on the electrode 23 can be a rubbing which is a wave like structure with ribs that orient the LC molecules) (see Fig. 1, [0052]).

As claim 12, Kimura teaches the liquid crystal display device according to claim 11, wherein a surface of the planarizing film is formed in an undulated shape (i.e. the alignment layer on the electrode 23 can be a rubbing which is a wave like structure with ribs that orient the LC molecules) (see Fig. 1, [0052]).

As to claim 34, Kimura teaches the liquid crystal display device according to claim 1, but is silent regarding the transparency design of the film, Dai teaches at least one of a plurality of electrodes constituting the electroluminescent element is a transparent electric conductive film (i.e. the use of the ITO transparent electrode) (see

Fig. 2, [0023]). Therefore the combination of Kimura and Dai would teach the limitation.

6. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura in view of Ma (USP 6757039).

As to claim 29, see claim 30, claim 29 from claim 30 only in the limitation of having reversing the polarizer layout to ensure the transmissivity is maximized during low energy state of the LC molecule. Kimura does not teaches the liquid crystal display device with the reverse mode functionality.

Ma teaches a transmissive LCD display mode where the polarizers are specifically positioned so that in a reverse mode the display result is maximized with the low energy liquid crystal texture (see Fig. 4B, Col. 10, Lines 1-50).

Therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the reversed mode position of Ma in the composition display system of Kimura as it is a known method of display design use a reversed position of the polarizer for the transmissive effect that is commonly known in the reverse mode type of LCD display.

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura in view of Lyu et al. (USP 6771344).

As to claim 23, Kimura teaches the liquid crystal display device according to claim 1, but does not teach wherein the liquid crystal layer is a mixture of liquid crystal and transparent solid material, and is a scattering type liquid crystal layer that controls scattering and transmission according to magnitude of a voltage applied to the liquid crystal layer. Lyu teaches wherein the liquid crystal layer is a mixture of liquid crystal and transparent solid material, and is a scattering type liquid crystal layer that controls scattering and transmission according to magnitude of a voltage applied to the liquid crystal layer (i.e. the spacers are transparent and helping to create a specific cell gap in the liquid crystal display structure which effects the scattering and transmission according to magnitude of the voltage applied to the liquid crystal layer, as lower cell gap created by smaller spacers lower voltage threshold and larger spacers creates larger gap increasing the voltage requirement) (see Lyu Fig. 20, Col. 7, Lines 60-67).

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura paragraph [0062] in view of paragraph [0006]).

As to claim 21, Kimura teaches the liquid crystal display device according to claim 20, wherein the EL control switching element is a thin film transistor having a semiconductor layer made of a poly-silicon thin film (see Fig. 3, [0062]). Kimura does not explicitly teach the liquid crystal layer switching element is a thin film transistor having a semiconductor layer made of an amorphous silicon film.

However in the back ground of the specification paragraph [0006], Kimura teaches that the layer of switching element can be implemented with LTPS TFT, HTPS TFT, and amorphous TFT silicon, this disclosure of the specification view by one of ordinary skill in the art at the time the invention was made will demonstrate that a different technology based TFT transistors can be used for the implementation of a redundant structure where the LCD and EL are separately controlled as this would allow for lower cost as polysilicon TFT structures are much more expensive to produce in mass quantity when compared to amorphous ones.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CALVIN C. MA whose telephone number is (571)270-1713. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on 571-272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Calvin Ma
September 8, 2009

/Chanh Nguyen/
Supervisory Patent Examiner, Art Unit 2629